

# Series 2260B Programmable DC Power Supplies

## Datasheet



Source a wide range of voltages and currents with the 360 W, 720 W, or 1080 W Series 2260B Programmable DC Power Supplies. Choose from 12 versions with voltage output of 30 V, 80 V, 250 V, or 800 V. The 360 W versions can output current of 36 A, 13.5 A, 4.5 A, or 1.44 A; the 720 W models can output 72 A, 27 A, 9 A, or 2.88 A; and the 1080 W instruments can output 108 A, 40.5 A, 13.5 A, or 4.32 A. This wide range of output voltages and current, combined with multiple interface choices, makes the Series 2260B ideal for use in a wide range of applications, including research and design, quality control, and production test.

### Applications

- Environmental test, stress test, and accelerated life testing
- LED and high power component testing
- Automotive testing
- Battery research and test
- Production test

### Key Features

- 360 W, 720 W, and 1080 W versions with voltages up to 800 V and currents up to 108 A
- Programmable voltage or current rise and fall times prevents damage to low impedance loads from inrush current
- Constant current priority setting reduces voltage and current overshoot when powering LEDs
- Programmable internal resistance simulates battery output
- Choose from analog control, USB, LAN, or optional GPIB interface for automated control
- Fit six 71 mm wide 360 W units or three 142 mm wide 720 W units or two 214 mm wide 1080 W units in a standard rack width to minimize bench and test system space

### Control the Voltage or Current Rise Time to Reduce Inrush Current and Prevent Device Damage

Series 2260B power supplies have programmable rise time (or slew rate) control to prevent potentially dangerous inrush currents from flowing into loads that have low resistance when power is initially supplied. Either voltage or current rise time can be controlled. With voltage slew rate control, voltage rise time can range from a slow, 0.1 V/s to a high speed of 1600 V/s for the 800 V supplies. When operating under constant current control, output current rise time can be programmed from a low slew rate of 0.001 A/s to a maximum value of 216 A/s for the 2260B-30-108. Programming a current rise time puts

the Series 2260B power supplies in a constant current control priority mode in which the current slew rate limits the rate at which the voltage rises across the device under test (DUT.) In addition to controlling rise time, fall time can also be programmed; fall time values can be different from rise time values. Delivery of power to a load can be precisely controlled to prevent overshoot spikes and excessive amounts of inrush current, eliminating damage to components, modules, or devices and generating more precise characteristic I-V curves for components such as LEDs.



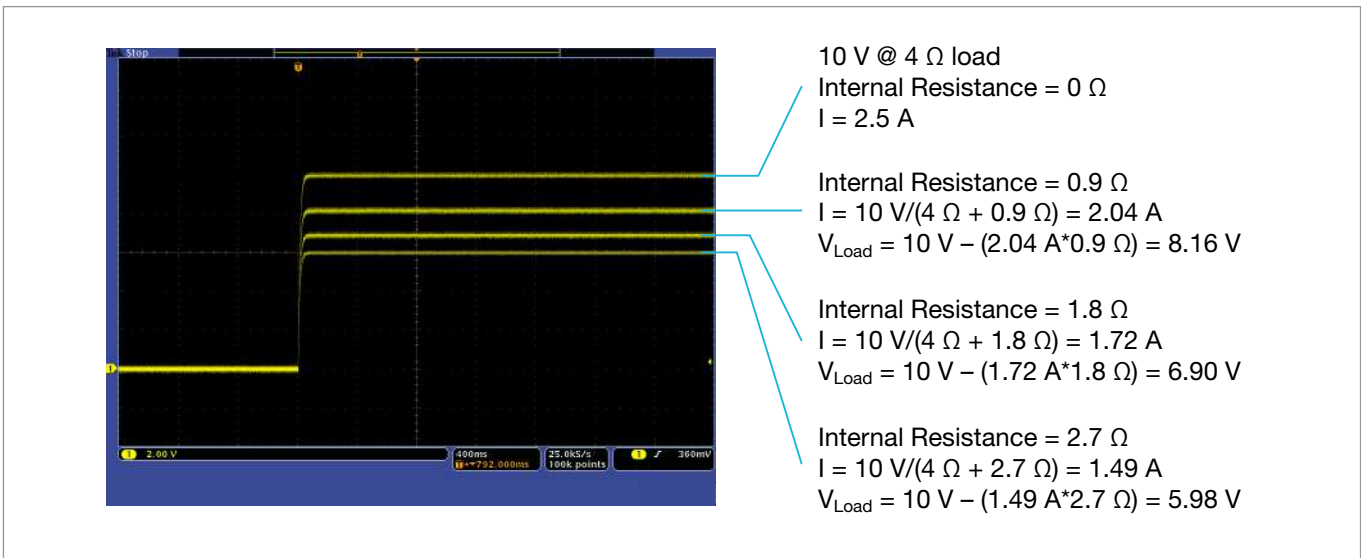
Precisely control voltage rise time with the variable slew rate control.

## Emulate the Response of a Battery

Test a circuit or device under the most realistic conditions by applying a test source with the output resistance that is equivalent to the output resistance of the actual source that will be used to power the circuit or device. For example, a battery has a varying internal resistance, and a device powered by a battery will have a voltage applied to the device that is reduced by the voltage drop across the battery's internal resistance. Versions of the Series 2260B power supplies can have an internal resistance up to 555  $\Omega$  to simulate a wide range of battery chemistries and load conditions.

## Flexible and Fast for Automated Test Systems

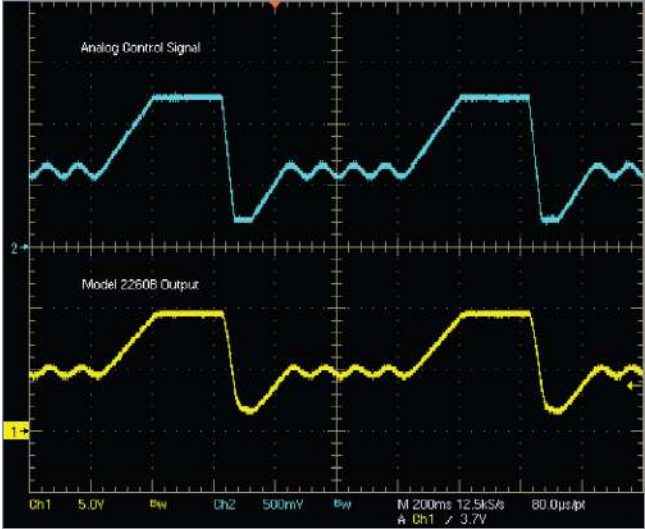
With their USB, LAN, or optional GPIB interfaces, Series 2260B power supplies will work in any automated system. In addition, these power supplies have an analog control capability that can control outputs via an external voltage and resistance. Furthermore, Series 2260B power supplies feature fast discharge capability to quickly dissipate the voltage on the output. These power supplies also have a fast, 1 ms transient recovery time to load changes. This combination of fast discharge time and fast transient response minimizes critical test time in automated test systems.



Use the programmable internal resistance to simulate a battery's output. In this example, a 2260B-80-13 power supply is simulating a 10 V battery whose internal resistance is 0  $\Omega$ , 0.9  $\Omega$ , 1.8  $\Omega$ , and 2.7  $\Omega$ . The resulting voltage at the output terminals drops from 10 V to 5.98 V due to the voltage drop across the internal resistance of the battery.

# Create Custom Voltage Source Waveforms

An internal test sequence mode allows the Series 2260B supplies to output a set of voltage levels for varying time intervals at each level. The test sequence can be stored and used repeatedly to determine DUT performance at number of voltage levels. In addition, the analog input control can be used to create voltage profiles that simulate how a battery responds to a fast changing load current requirement such as a large inrush current. Also, generate a combined DC output level with an AC signal superimposed on it to test how a circuit responds to noise on its DC power source. The analog input control parameter can be either a voltage input or a resistance input. With this analog control capability, numerous types of DC supply signals can be generated to test circuits and devices under a wide range of circumstances.



A signal generator (top plot) controls the 2260B to create a complex DC supply waveform (bottom plot) that simulates both a voltage drop due to a large inrush current and noise on the DC supply line.



Rear panel of 360 W models.



Rear panel of 720 W models.



Rear panel of 1080 W models.

## Specifications (23°C ±5°C)

	2260B-30-36	2260B-30-72	2260B-30-108	2260B-80-13	2260B-80-27	2260B-80-40	2260B-250-4	2260B-250-9	2260B-250-13	2260B-800-1	2260B-800-2	2260B-800-4
<b>Output Rating</b>												
<b>Voltage</b>	0–30 V	0–30 V	0–30 V	0–80 V	0–80 V	0–80 V	0–250 V	0–250 V	0–250 V	0–800 V	0–800 V	0–800 V
<b>Current</b>	0–36 A	0–72 A	0–108 A	0–13.5 A	0–27 A	0–40.5 A	0–4.5 A	0–9 A	0–13.5 A	0–1.44 A	0–2.88 A	0–4.32 A
<b>Power</b>	360 W	720 W	1080 W	360 W	720 W	1080 W	360 W	720 W	1080 W	360 W	720 W	1080 W
<b>Ripple and Noise (Noise bandwidth 20 MHz, ripple bandwidth 1 MHz)</b>												
<b>CV p-p</b>	60 mV	80 mV	100 mV	60 mV	80 mV	100 mV	80 mV	100 mV	120 mV	150 mV	200 mV	200 mV
<b>CV rms</b>	7 mV	11 mV	14 mV	7 mV	11 mV	14 mV	15 mV	15 mV	15 mV	30 mV	30 mV	30 mV
<b>CC rms</b>	72 mA	144 mA	216 mA	27 mA	54 mA	81 mA	10 mA	20 mA	30 mA	5 mA	10 mA	15 mA
<b>Programming Accuracy</b>												
<b>Voltage</b>	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 200 mV	0.1% + 200 mV	0.1% + 200 mV	0.1% + 400 mV	0.1% + 400 mV	0.1% + 400 mV
<b>Current</b>	0.1% + 30 mA	0.1% + 60 mA	0.1% + 100 mA	0.1% + 10 mA	0.1% + 30 mA	0.1% + 40 mA	0.1% + 5 mA	0.1% + 10 mA	0.1% + 15 mA	0.1% + 2 mA	0.1% + 4 mA	0.1% + 6 mA
<b>Readback Accuracy</b>												
<b>Voltage</b>	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 10 mV	0.1% + 200 mV	0.1% + 200 mV	0.1% + 200 mV	0.1% + 400 mV	0.1% + 400 mV	0.1% + 400 mV
<b>Current</b>	0.1% + 30 mA	0.1% + 60 mA	0.1% + 100 mA	0.1% + 10 mA	0.1% + 30 mA	0.1% + 40 mA	0.1% + 5 mA	0.1% + 10 mA	0.1% + 15 mA	0.1% + 2 mA	0.1% + 4 mA	0.1% + 6 mA
<b>Response Time</b>												
<b>Rise Time</b>	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	100 ms	100 ms	100 ms	150 ms	150 ms	150 ms
<b>Fall Time (full load)</b>	50 ms	50 ms	50 ms	50 ms	50 ms	50 ms	150 ms	150 ms	150 ms	300 ms	300 ms	300 ms
<b>Fall Time (no load)</b>	500 ms	500 ms	500 ms	500 ms	500 ms	500 ms	1200 ms	1200 ms	1200 ms	2000 ms	2000 ms	2000 ms
<b>Load Transient Recovery Time (load change from 50 to 100%)</b>	1 ms	1 ms	1 ms	1 ms	1 ms	1 ms	2 ms	2 ms	2 ms	2 ms	2 ms	2 ms
<b>Programming Resolution (by PC Remote Control Mode)</b>												
<b>Voltage</b>	1 mV	1 mV	1 mV	2 mV	2 mV	2 mV	5 mV	5 mV	5 mV	14 mV	14 mV	14 mV
<b>Current</b>	1 mA	2 mA	3 mA	1 mA	2 mA	3 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
<b>Measurement Resolution (by PC Remote Control Mode)</b>												
<b>Voltage</b>	1 mV	1 mV	1 mV	2 mV	2 mV	2 mV	5 mV	5 mV	5 mV	14 mV	14 mV	14 mV
<b>Current</b>	1 mA	2 mA	3 mA	1 mA	2 mA	3 mA	1 mA	1 mA	1 mA	1 mA	1 mA	1 mA
<b>Front Panel Display Accuracy</b>												
<b>Voltage</b>	0.1% ± 20 mV	0.1% ± 20 mV	0.1% ± 20 mV	0.1% ± 20 mV	0.1% ± 20 mV	0.1% ± 20 mV	0.1% ± 200 mV	0.1% ± 200 mV	0.1% ± 200 mV	0.1% ± 400 mV	0.1% ± 400 mV	0.1% ± 400 mV
<b>Current</b>	0.1% ± 40 mA	0.1% ± 70 mA	0.1% ± 100 mA	0.1% ± 20 mA	0.1% ± 40 mA	0.1% ± 50 mA	0.1% ± 5 mA	0.1% ± 10 mA	0.1% ± 20 mA	0.1% ± 2 mA	0.1% ± 4 mA	0.1% ± 6 mA

**Regulation (CV)** Load: 0.05% of setting + 5 mV. Line: 0.05% of setting + 3 mV.

**Regulation (CC)** Load: 0.1% of setting + 5 mA. Line: 0.1% of setting + 5 mA.

**Voltage Slew Rate Range: Rising and Falling**

- 0.1 V/s to 60 V/s (2260B-30-36, 2260B-30-72, 260B-30-108).
- 0.1 V/s to 160 V/s (2260B-80-13, 2260B-80-27, 2260B-80-40).
- 0.1 V/s to 60 V/s (2260B-250-4, 2260B-250-9, 2260B-250-13).
- 1 V/s to 1600 V/s (2260B-800-1, 2260B-800-2, 2260B-800-4).

**Current Slew Rate Range: Rising and Falling**

0.01 A/s to 72.00 A/s (2260B-30-36).  
 0.1 A/s to 144.0 A/s (2260B-30-72).  
 0.1 A/s to 216.0 A/s (2260B-30-108).  
 0.01 A/s to 27.00 A/s (2260B-80-13).  
 0.01 A/s to 54.00 A/s (2260B-80-27).  
 0.01 A/s to 81.00 A/s (2260B-80-40).  
 0.001 A/s to 9.000 A/s (2260B-250-4).  
 0.01 A/s to 18.00 A/s (2260B-250-9).  
 0.01 A/s to 27.00 A/s (2260B-250-13).  
 0.001 A/s to 2.880 A/s (2260B-800-1).  
 0.001 A/s to 5.760 A/s (2260B-800-2).  
 0.001 A/s to 8.640 A/s (2260B-800-4).

**Maximum Voltage Drop in Each Load Wire When Using Remote Sense**

**30 V and 80 V Models:** 0.6 V.  
**250 V and 800 V Models:** 1 V.

**Output Delay Time Range**

**On Delay and Off Delay:** 0 s to 99.99 s.

**Internal Resistance Range**

0.000  $\Omega$  to 0.833  $\Omega$  (2260B-30-36).  
 0.000  $\Omega$  to 0.417  $\Omega$  (2260B-30-72).  
 0.000  $\Omega$  to 5.926  $\Omega$  (2260B-80-13).  
 0.000  $\Omega$  to 2.963  $\Omega$  (2260B-80-27).  
 0.000  $\Omega$  to 0.278  $\Omega$  (2260B-30-108).  
 0.000  $\Omega$  to 1.975  $\Omega$  (2260B-80-40).  
 0.00  $\Omega$  to 55.55  $\Omega$  (2260B-250-4).  
 0.00  $\Omega$  to 27.77  $\Omega$  (2260B-250-9).  
 0.00  $\Omega$  to 18.51  $\Omega$  (2260B-250-13).  
 0.0  $\Omega$  to 555.5  $\Omega$  (2260B-800-1).  
 0.0  $\Omega$  to 277.8  $\Omega$  (2260B-800-2).  
 0.0  $\Omega$  to 185.4  $\Omega$  (2260B-800-4).

**Series and Parallel Capability**

**Parallel Operation:** Up to 3 units including the master unit.  
**Series Operation:** Up to 2 units including the master unit (30 V and 80 V models only).

**Protection Functions**

**OVP:** 10% to 100% of rated output voltage range.  
**Accuracy:**  $\pm 2\%$  of rated output voltage.  
**OCP:**  $\sim 10\%$  to 110% of rated output current range.  
**Accuracy:**  $\pm 2\%$  of rated output current.  
**OTP:** Activated by elevated internal temperatures.

**Isolation Voltage**

500 VDC, output to chassis.

**Analog Voltage Control**

**Voltage Setting Accuracy:**  $\pm 0.5\%$  of rated output voltage.  
**Current Setting Accuracy:**  $\pm 1\%$  of rated output current.

**Analog Resistance Control**

**Voltage Setting Accuracy:**  $\pm 1.5\%$  of rated output voltage.  
**Current Setting Accuracy:**  $\pm 1.5\%$  of rated output current.

## General

<b>Analog Control</b>	External voltage or resistance control of output, voltage and current monitor outputs, turn-on, turn-off control, status monitoring, 26-pin connector (rear panel).
<b>Interface</b>	<b>USB:</b> 1.1/2.0, Type A host (front panel), Type B control (rear panel). <b>LAN:</b> 100BASE-T (100 Mb/s). <b>GPIB:</b> (with optional 2260B-GPIB-USB Adapter).
<b>AC Input Range</b>	85 VAC–265 VAC, 50/60 Hz, single phase.
<b>Maximum Power Consumption</b>	500 VA (2260B-30-36, 2260B-80-13, 2260B-250-4, 2260B-800-1). 1000 VA (2260B-30-72, 2260B-80-27, 2260B-250-9, 2260B-800-2). 1500 VA (2260B-30-108, 2260B-80-40, 2260B-250-13, 2260B-800-4).
<b>Power Factor</b>	0.97 to 0.99 (typical).
<b>Fan</b>	With thermal sensing control
<b>Environment</b>	<b>Operating:</b> 0° to 50°C, 20% to 85% RH. <b>Storage:</b> –25° to 70°C, 90% RH or less.
<b>Temperature Coefficient (after 30 minutes warm-up)</b>	<b>Voltage:</b> 100 ppm/°C. <b>Current:</b> 200 ppm/°C.
<b>Safety</b>	Complies with European Union Low Voltage Directive.
<b>Electromagnetic Compatibility</b>	Complies with European Union EMC Directive.
<b>Dimensions, Weight</b>	<b>360 W Models:</b> 71 mm wide × 124 mm high × 350 mm deep (2.80 in. × 4.88 in. × 13.78 in.). <b>Net Weight:</b> Approx. 3 kg (6.6 lb.). <b>Shipping Weight:</b> 4.3 kg (9.5 lb.).  <b>720 W Models:</b> 142.5 mm wide × 124 mm high × 350 mm deep (5.61 in. × 4.88 in. × 13.78 in.). <b>Net Weight:</b> Approx. 5 kg (11 lb.). <b>Shipping Weight:</b> 6.8 kg (15 lb.).  <b>1080 W Models:</b> 214 mm wide × 124 mm high × 350 mm deep (8.43 in. × 4.88 in. × 13.78 in.). <b>Net Weight:</b> Approx. 7.5 kg (16.5 lb.). <b>Shipping Weight:</b> 9.6 kg (21 lb.).
<b>Warranty</b>	3 years.

## Ordering Information

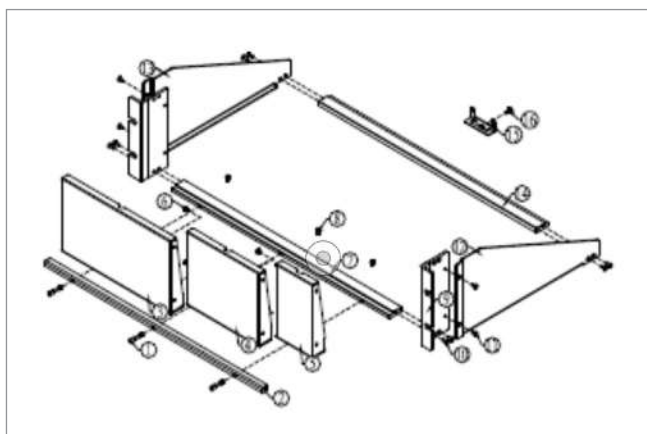
2260B-30-36	Programmable DC 360 W Power Supply, 30 V, 36 A
2260B-80-13	Programmable DC 360 W Power Supply, 80 V, 13.5 A
2260B-250-4	Programmable DC 360 W Power Supply, 250 V, 4.5 A
2260B-800-1	Programmable DC 360 W Power Supply, 800 V, 1.44 A
2260B-30-72	Programmable DC 720 W Power Supply, 30 V, 72 A
2260B-80-27	Programmable DC 720 W Power Supply, 80 V, 27 A
2260B-800-2	Programmable DC 720 W Power Supply, 800 V, 2.88 A
2260B-30-108	Programmable DC 1080 W Power Supply, 30 V, 108 A
2260B-80-40	Programmable DC 1080 W Power Supply, 80 V, 40.5 A
2260B-250-13	Programmable DC 1080 W Power Supply, 250 V, 13.5 A
2260B-800-4	Programmable DC 1080 W Power Supply, 800 V, 4.32 A

## Supplied Accessories

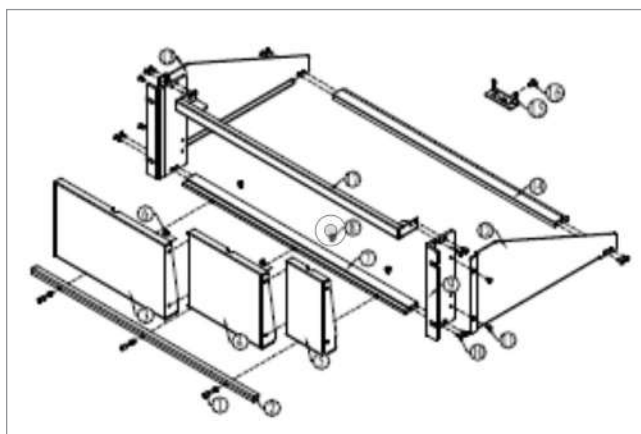
2260B Basic Accessory Kit (for 30 V and 80 V models)
2260B-010 Basic Accessories Kit (for 250 V/800 V Series)
Test Lead Set (for 30 V and 80 V models)
2260-009 Test Lead (for 250 V/800 V models)
USB Cable
Power Cord
Certificate of Traceable Calibration

## Available Accessories

2260B-RMK-JIS	Rack Mount Kit (JIS racks)
2260B-RMK-EIA	Rack Mount Kit (EIA racks)



2260B-RMK-EIA: Rack mount kit (EIA racks).



2260B-RMK-JIS: Rack mount kit (JIS racks).

## Available Services

Model Number*-EW	3-year factory warranty extended to 1 additional year from date of shipment
Model Number*-5Y-EW	3-year factory warranty extended to 5 years from date of shipment
C/Model Number*-3Y-STD	KeithleyCare® 3 Year Standard Calibration Plan
C/Model Number*-3Y-DAT	KeithleyCare 3 Year Calibration with Data Plan
C/Model Number*-5Y-STD	KeithleyCare 5 Year Standard Calibration Plan
C/Model Number*-5Y-DAT	KeithleyCare 5 Year Calibration with Data Plan

\* Replace the specific power supply model number in place of model number to generate the appropriate model number for a service item. For example, for 2260B-30-36, a 1-year extended warranty model number would be 2260B-30-36-1-EW.

## Contact Information:

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